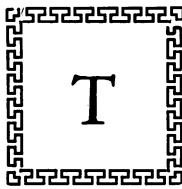


THE PHYSIOLOGY AND PSYCHOLOGY OF CONVALESCENCE*

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HE word, convalescence, is used by us today exactly as it was by the Romans two thousand years ago, and some of our views and measures probably date back to the same period. No doubt a change of air, a visit to the baths of Baiae perhaps, rest and nutritious diet were the regimen for the Roman recovering from a plasmodial fever. No doubt he was ordered a goblet of Falernian wine with his meals and to his diet were added such delicacies of the Romans of that day as the delicious orange colored mushroom, the *Amanita caesarea*.

Hippocrates, Galen and Celsus made reference to the regulation of diet and exercise for the patient convalescing from acute disease. Today we think of the problem in much the same terms.

Our current writings contain little mention of convalescence. Houston's book, "The Art of Treatment," does not mention the problem of convalescent care. In Beckman's fine book on Treatment, the word, convalescence, does not appear in the index and a review of the Index Medicus reveals few articles of scientific value in this field. In Volume VII of Nelson's Loose Leaf Medicine an excellent article by Corwin on Convalescent Homes will appear which will give us the historical background of the whole subject; but he points out, and quotes others to the same end, that there is a lamentable lack of real factual knowledge concerning the conditions which exist in the convalescent individual himself.

The reasons for this ignorance are many and are easy to discover—three seem to me to be the more important. First, is an overemphasis on the psychological aspects of convalescence; second, a natural falling off of interest once the patient seems to be convalescing; and third, the grouping together under one term, convalescence, of a great variety of different states arising from many different diseases, emotional shocks, or surgical operations. Let us briefly comment on these three features.

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For many years it has been the habit to attribute many or even most of the phenomena of convalescence to psychological causes. For example, Dunbar,¹ in 1936, quotes an eminent psychiatrist to the effect that 50 per cent of the problems of the acute stage of disease and 75 per cent of those of convalescence "have their primary origin not in the body but in the mind of the patient." This may be true but of course we recognize that this use of the word mind is a concession to ordinary usage, for the mind in the final analysis is but a functional expression of the body. If it is true that 75 per cent of the problems of convalescence arise in the mind of the patient, then our present methods are perhaps satisfactory; but if this is not true and we assume it to be, then certainly we will fail to investigate the convalescent state and will certainly not discover whatever underlying causes there may be for the phenomena of convalescence.

There is some analogy between this situation with regard to the convalescent state and that of psychiatry until very recent years. Just consider for a moment how the discovery of malarial therapy for dementia paralytica affected our conceptions. As Burlingame² recently wrote, "at one fell swoop a dozen different so-called mental diseases had a segment sliced off them."

Just as long as we considered the phenomena of mental disease to be of purely psychogenic origin, we failed to investigate the patient for possible organic diseases and we of course applied only such therapy as we thought appropriate for psychogenic disorders. Now today a new concept of mental disease is prevalent and we may hope for additional startling advances in therapy. An almost identical state of affairs exists with regard to convalescence.

The second point is that convalescence has, perhaps understandably, not interested the physician; the patient is out of danger, let nature take its course aided by a change of scene, rest, exercise, diet and tonics. This does not perhaps sound so important, but certainly we have been apathetic and careless about the matter and it is at this point that I wish to introduce my congratulations to The New York Academy of Medicine and to the Macy Foundation for coöperating in arranging this symposium—intended to focus attention on the problems of the forgotten man, the convalescent, and I suspect with the deliberate hope that our ignorance of the convalescent state will shame each of us into greater interest and active investigation of what may actually be the basic factors at

work in what we carelessly call convalescence.

The third point is an obvious one. We use the term, convalescence, to denote the period following such widely differing initial illnesses as lobar pneumonia, typhoid fever, duodenal ulcer hemorrhage, and also after such varied surgical procedures as thyroidectomy, herniotomy or acute appendicitis. The state of these patients as they come into what we call convalescence must obviously differ enormously—clearly their state is a function of a number of variables such as the previous condition of the patient, the duration of the illness, the degree of fever, and the disturbances of body physiology and chemistry incident to the disease. No two diseases can possibly leave the same state of affairs after the illness subsides and convalescence commences.

In a very rough way some cognizance is taken of this fact. We have rules of thumb permitting convalescents from some diseases a shorter period of inactivity than others and in a similar manner we stress certain needs in some—such as the restoration of lost weight, but too often the term, convalescence, is used as though it denoted a single entity—produced by a common cause, exhibiting common phenomena and amenable to a standard management. Obviously this is absurd and it would seem unnecessary to labor this point were it not for the frequency of the error and its seriousness. Not until we learn to recognize, in each type of convalescent, the actual abnormalities which persist from the preceding disorder and which differentiate that individual in convalescence from the same organism in health, can we properly meet the various therapeutic indications in each instance.

What do we know about this phase of convalescence? Very little, must be the humiliating reply. The very word, convalesce, means to grow strong and this is clearly the purpose of convalescence, but unfortunately we know very little of what produces even this weakness from which we would have our patients recover. We have all experienced it and wondered at it, yet we find it difficult to explain. It is easy to attribute this weakness to fever, to long-standing undernutrition or to nervous exhaustion, whatever that may be, but it is a very variable phenomenon and sometimes extreme after a short attack of such an infection as influenza, for example. We need more information on this as well as on many other aspects of the convalescent state.

Let us mention some of the few facts which are known—more to raise questions for further discussion than for any other reason. It is

known that the body metabolism rises in fevers and, as DuBois has pointed out, the rise is quite uniformly proportional to the degree of fever and does not show the variability which might be anticipated from the clinical differences shown by different infections. Following the return to normal temperature, the metabolism drops sharply—and one, therefore, enters convalescence with a lowered metabolism. This is more marked after a long illness such as typhoid than after pneumonia, for example. There is little doubt that this phenomenon is related to the degree of undernutrition. The available figures were obtained years ago when the usual typhoid patient was extremely undernourished. The data is scarcely applicable today when the disease seems less severe and treatment includes a higher caloric intake. In the former type of typhoid patient, the metabolism rose as convalescence continued but for some time the typhoid convalescent, according to Svenson,³ quoted by DuBois, used more oxygen for a given task than did a normal individual. With more liberal diets, the patient can be kept in nitrogen and weight equilibrium and usually be brought into convalescence in a far better state. This, of course, alters the whole question of the duration of convalescence.

When anemia is present in convalescence as, for example, following a hemorrhage from duodenal ulcer, the question of diet becomes of the greatest importance. Whipple's studies on regeneration of lost blood proteins reveal how dependent regeneration is on the character of the diet and how much any, even trifling, intercurrent infection handicaps the restoration of the blood to normal.

Pneumonia is one of the few conditions in which studies of the disease have been continued into what may be termed the early days of convalescence. The data is quite extensive and demonstrates that during at least the early weeks of convalescence, marked alterations in body chemistry persist. After the crisis the concentrations in the blood of total base, chloride and protein require one or two weeks to return to their normal values; the chloride being slower than the others to reach its normal level. Sodium continues to be decreased while potassium is increased for some time after the crisis. The decrease in protein is due to a reduction in the albumin. Water is stored just before the crisis and lost soon after. Weight changes reflect this, but the changes in the electrolyte concentration cannot all be explained on fluid shifts, for the behavior of the freezing point indicates that abnormally high amounts of non-

electrolytes are present during the postcritical period.

These studies by Sunderman and Austin⁴ at the University of Pennsylvania are indicative of the marked alteration of bodily chemistry which may be present in that period which we call convalescence. Obviously they must be of importance and yet we take no cognizance of their presence nor of any variability in the changes produced by one disease or another.

Similarly there is some evidence of disturbance of physiology persisting into convalescence after various fevers. After infection the pulse may be slow for several months and the blood pressure's reaction to exercise will afford evidence of the stage of convalescence (Mann⁵). The electrocardiogram may continue in convalescence to reveal evidences of myocardial damage (Köhler⁶).

In every field there is some evidence available which proves that the disturbance of the acute stage of the disease does not immediately disappear with the onset of convalescence. Reznikoff⁷ has carefully reviewed the changes in the white cell hemogram from the end of the acute stage of an infection until complete restoration of health has occurred. The behavior of the various forms of white cells is fairly constant and is not understood. Why do the monocytes increase during the subsidence of an infection and the eosinophils rise after the infection is over? In the immunological field it is well known that the antibody titer continues to rise long into convalescence.

I mention these isolated facts to hint at the extent of the continuing disturbance which we might find if further studies were made in other lines and in other diseases. If one allows his imagination to replace facts it is easy to picture the various phenomena of convalescence as due to depression of various endocrine activities—a lowered adrenal reserve, a lessened gonadal activity, perhaps a general reduction in the influence of the pituitary, possibly the exact reverse—we do not know. Gastric acidity, histamine production, intestinal motility may all be abnormal for a longer period than one might expect.

In these days of powerful drugs and sera we must admit the possibility that their effects may not wear off as quickly as we might wish. The sulfanilamid-sulfapyridin group may be examples of this although their occasional toxic effects are usually prompt in appearance. Serum disease in mild form may occur as an unrecognized handicap to rapid convalescence.

In all of this, one must still not lose sight of the psychogenic aspects of convalescence, nor must we allow ourselves just because they have been overemphasized in the past to underestimate their importance in many cases. But we should look forward to the day when these psychological phenomena will be explainable in terms of abnormal chemistry and physiology. In the final analysis it may be nothing more than a difference in terminology, but it does seem to me that it is likely to discourage true progress if we accept the view that 75 per cent of the problems of convalescence arise in the mind rather than in the body.

Finally, a word about the treatment or care of the convalescent. We reveal our point of view when we speak of the treatment of a disease, but the care of the convalescent. As a rule, of course, the convalescent is not truly so unless he is on the way to complete health. Therefore, any detailed treatment may seem unnecessary. On the other hand, any treatment which may be administered is likely to get the credit for the almost inevitable improvement. In this manner, undoubtedly, did tonics and restoratives gain their reputation. Rest, increasing exercise, nutritious diet and a harmless tonic thrown in for good measure form the basis of most convalescent care. Obviously, however, if there are persisting deviations from normal in metabolism, bodily chemistry and physiology, restoration to health might well be expedited if attention were directed to correcting each and every one of these abnormalities. This would require much more knowledge than we now possess. The results of each disease, of surgery, of trauma, of emotional shock would have to be known and then individualized in each individual case.

The convalescent state can never be predicted from the disease alone. It will be influenced by the patient's sex, previous state of health, presence of other chronic diseases, temperament, et cetera. It must be different at different ages; in children, in adults, in the aged. And convalescent care will have to take these matters into consideration. The aged must avoid prolonged bed rest lest hypostasis result in pneumonitis; their habits must be respected for they cannot abruptly be altered. The aged patient must be accepted as he is whether the doctor likes it or not. He may well be damaged goods in a number of ways and one can hope only to restore him to his habitual best health level. Convalescence for the woman may differ widely from that of a man; that of an individual with pre-existing diabetes or tuberculosis must be altered to meet the special conditions.

In these brief remarks I have stressed what we all know to be true: that convalescence is not a constant nor a single state; that it presents many phenomena, many truly organic, some psychogenic; that we know far too little of the organic results of different acute processes which persist into convalescence; that ideal treatment of convalescence calls for the recognition of these deviations from the normal and for their correction in terms of the individual convalescent.

In the discussions which are to follow much data toward these ends will no doubt be presented which will answer some of the questions which have been raised. Only by such discussion can the matter be advanced, and if in this way we can arrive at a clearer conception of convalescence, this well-planned conference will have well justified itself. Let us attempt in these discussions to avoid generalizations and preconceived notions, let us bring to bear on convalescence the same factual and critical approach which has solved so many of our medical problems and which has been the secret of all great advance in science.

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